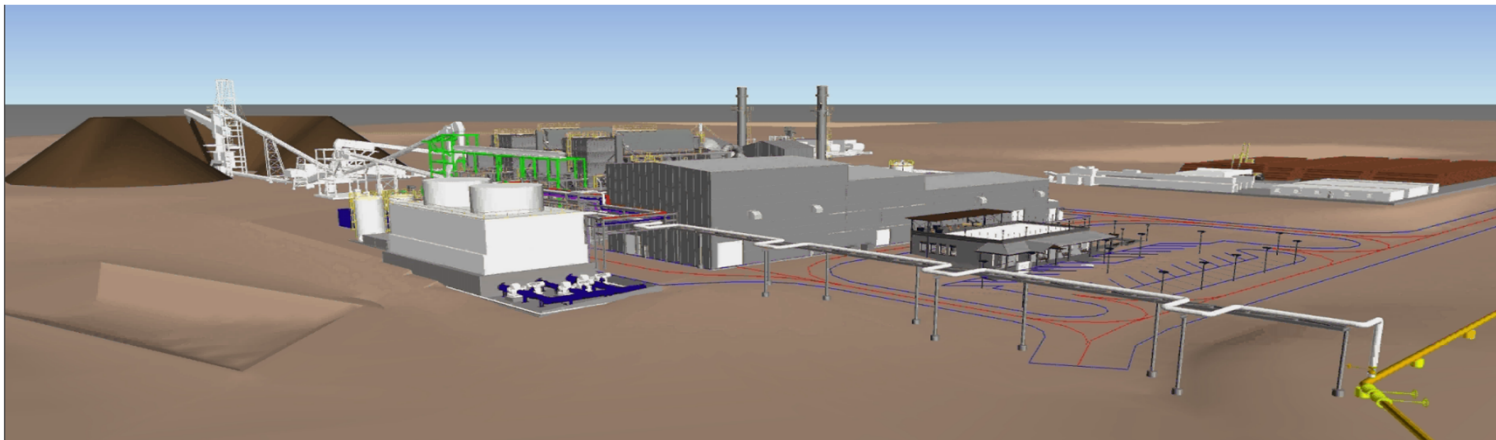




U.S. DEPARTMENT OF
ENERGY



Biomass Cogeneration Facility Savannah River Site, Aiken SC

CAB Briefing
January 25, 2011



EM Environmental Management
safety ♦ performance ♦ cleanup ♦ closure

Biomass Cogeneration Facility

Contents

- ☐ Introductions/expectations of the meeting
- ☐ Project Drivers
- ☐ Contract Overview
- ☐ About the Project
 - Biomass Cogeneration Facility
 - Two (2) Biomass Heating Plants
- ☐ Benefits
- ☐ Safety
- ☐ Update on construction
 - Biomass Cogeneration Facility
 - Biomass Heating Plants
- ☐ Look Ahead



Biomass Cogeneration Facility

Project Drivers

- ❑ Steam and electricity on site is currently provided by two facilities
 - D-Area Powerhouse is over 55 years old and well past its economic life. Condition and reliability are rapidly deteriorating.
 - K-Area Boilers are not cost effective in the current seasonal use mode or with the unpredictable increasing price of fuel oil.
- ❑ Steam demand will remain for current and future critical missions, but will be reduced over time
- ❑ There are several Federal mandates that require Federal Agencies to conserve energy
 - Statutory requirement of EPACT 2005 to increase use of renewable energy to 7.5% by 2013
 - Executive Order 13423 and DOE-HQ initiatives mandate maximum use of renewable energy sources and Energy Savings Performance Contracts



Biomass Cogeneration Facility

Contract Overview

- Project will be executed as a Delivery Order under the DOE Biomass and Alternate Methane Fuel (BAMF) Super Energy Savings Performance Contract (ESPC)
- Contract signed on May 15, 2009 between Ameresco Federal Solutions (Ameresco) and the DOE-SR
 - Ameresco is responsible for the project and for operations throughout the performance period of the contract
- Turnkey (finance, design, construct, operate and maintain)
- Implementation Cost: \$149,172,566
- Contract Term: 19 Years



Biomass Cogeneration Facility

About the Biomass Project

Biomass Heating Plants:

- ☐ Two biomass boilers will be installed, one located at K Area and one located at L Area.
- ☐ Biomass boilers 10,500 pph capacity each
- ☐ The boilers at the K & L Areas will use fuel from the main plant and provide steam only.
- ☐ Full-sized fuel oil burners for backup
- ☐ Automated plant operations (remote operations)

Biomass Cogeneration Facility:

- ☐ The proposed plant will include (2) 120,000 pph boilers.
- ☐ The 850 psig steam produced by the boilers will pass through a single extraction 20 megawatt turbine.
- ☐ The biofuel used will consist primarily of clean biomass waste, with a small percentage of bio derived fuel (BDF).
- ☐ The steam and power produced from the facility will be exported to the SRS distribution system.
- ☐ The Biomass plant is an ESPC project, privately funded.

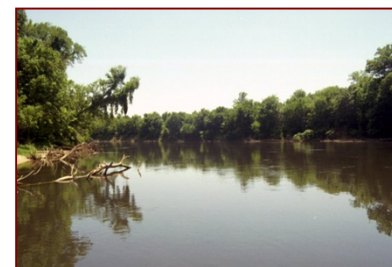


**WILL BE THE LARGEST FEDERAL
BIOMASS FACILITY**

Biomass Cogeneration Facility

Project Environmental Benefits

- ❑ Overall annual air emissions rates will decrease:
 - Particulate Matter by > 400 tons a year
 - NO_x by >2,500 tons a year, and
 - SO₂ by more than 3,500 tons a year
- ❑ Greenhouse Gas (GHG) emissions reduced by 100,000 tons a year significantly decreasing the carbon footprint of the SRS
- ❑ Use of renewable energy
- ❑ The amount of river water currently drawn from the Savannah River will decrease by over 1.4B gallons per year



Biomass Cogeneration Facility

Safety

- Approximately 135 workers on site
- Over 200,000 safe man-hours
- No reportable incidents in 16 months
- Three first aid (minor cuts)
- One accident (truck cab rotation)
- Weekly inspections by DOE



Biomass Cogeneration Facility

Phase 1 – Site Work

September 2009 - March 2010



- Emphasis on
 - clearing and grubbing
 - site stabilization
 - establishing the cut and fill balances
 - installation of the erosion controls and stormwater system
 - installing the fire water system
 - and establishing the tie-ins for electrical, water, sewer, and telecommunications



Biomass Cogeneration Facility

Final Site Prep



March 2010

- ☐ Site preparation complete
- ☐ Ready for first concrete placement



Biomass Cogeneration Facility

Phase 2 - Vertical Construction

March 2010



- Mudmat poured, rebar set, and forming completed for the first boiler pad concrete placement on March 6, 2010.
- Boiler pad and truck dumping station pad completed in June
- Stacker/Reclaimer pad and conveyor piers placed
- Hog tower, Magnet and Transfer tower pads placed
- Cooling tower and Turbine pad placed



Biomass Cogeneration Facility

Phase 2 - Vertical Construction *(continued)*



June 2010 - Present

- First steel for the boiler combustor installed in early June
- Steel erection 90% complete
- Boiler parts from EPI have arrived ahead of schedule



Biomass Cogeneration Facility

Burma Road Construction (from 3,000 ft)



Biomass Cogeneration Facility

Key Milestones

Date

- | | |
|--|-----------------|
| <input checked="" type="checkbox"/> Delivery Order Award | 15-May-09 |
| <input checked="" type="checkbox"/> Major Equipment Purchase | Following Award |
| <input checked="" type="checkbox"/> Mobilization | 14-Sep-09 |
| <input checked="" type="checkbox"/> Site Work Complete | 31-Mar-10 |
| <input checked="" type="checkbox"/> Boiler Pad Complete | 04-Jun-10 |
| <input checked="" type="checkbox"/> Boiler Delivery | 15-Oct-10 |
| <input type="checkbox"/> Turbine Delivery | 07-Apr-11 |
| <input type="checkbox"/> Boiler Erection Complete | 23-May-11 |
| <input type="checkbox"/> Electrical/Piping Installation Complete | 03-Aug-11 |
| <input type="checkbox"/> Start-up & Commissioning Complete | 01-Nov-11 |
| <input type="checkbox"/> Turnover | 15-Dec-11 |



K and L Area Heating Plants



June 2010

- ❑ Boiler Pad excavation complete, mudmat poured, and pad placed in May.
- ❑ Hurst boiler placed in June on schedule.



K and L Area Heating Plants

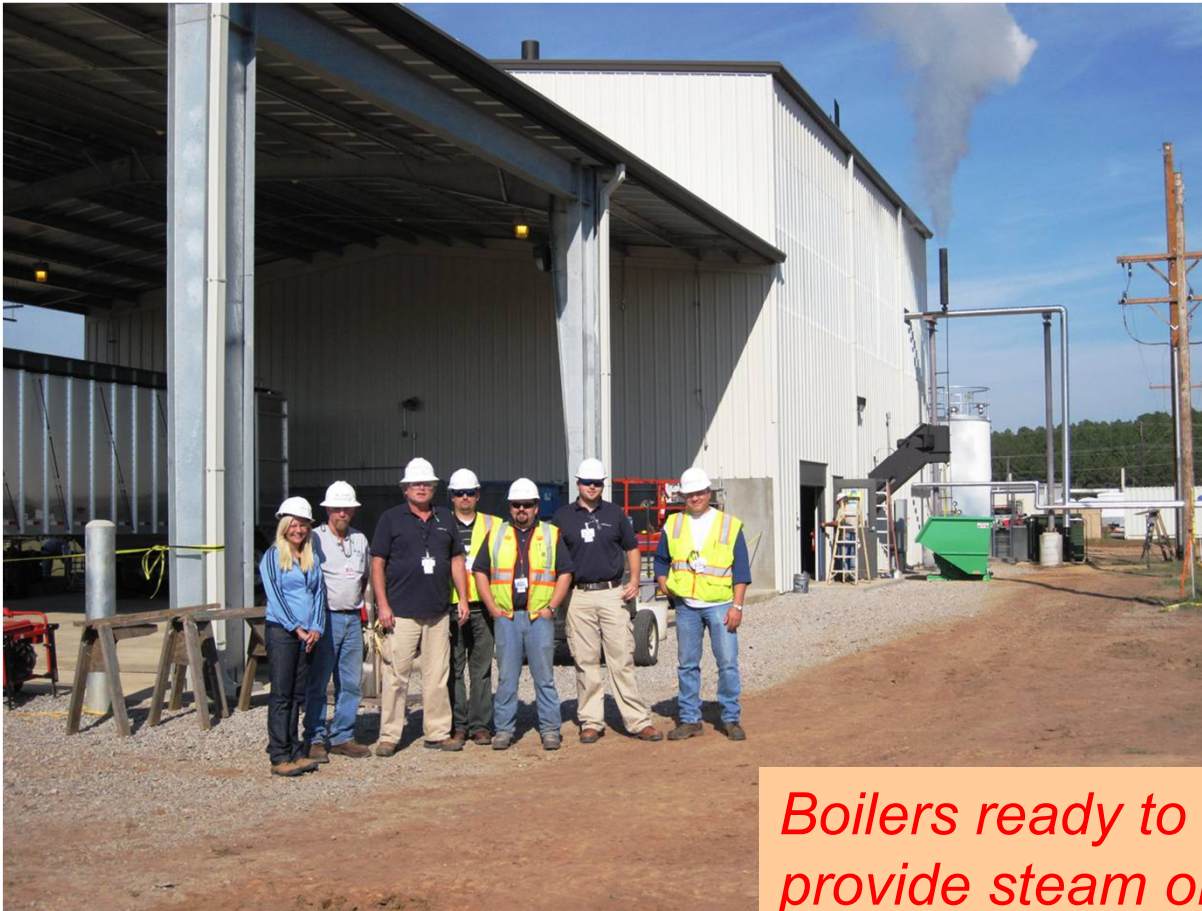


August 2010

- Work on K and L Heating Plants well underway
 - Piping
 - Electrical
 - Siding
 - Roofing



K and L Area Heating Plants



November 2010

- ☐ Construction Complete
- ☐ Start-up and Commissioning
- ☐ DOE Readiness Assessment and Acceptance

*Boilers ready to
provide steam on
November 24, 2010*



Biomass Cogeneration Facility

Summary/Look Ahead

- Replace two (2) aging and inefficient plants
- Major source of renewable energy for DOE
- Positive impact to the economy and environment
- Success start-up of Biomass Heating Plants in K and L Area
- Construction of large Biomass Cogeneration Facility is on schedule
- Start-up, commissioning and DOE acceptance on track for December 2011

